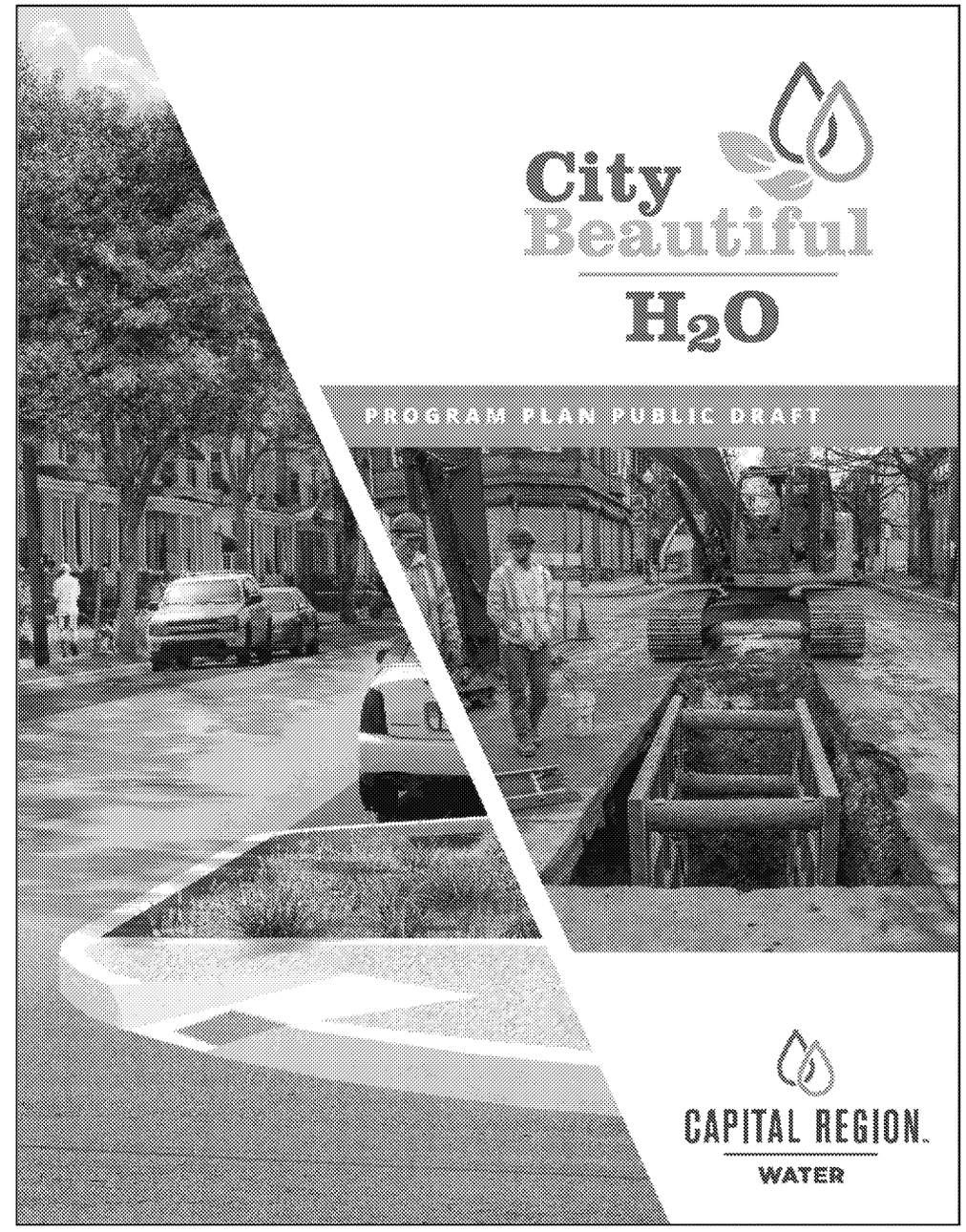
CAPITAL REGION™
WATER

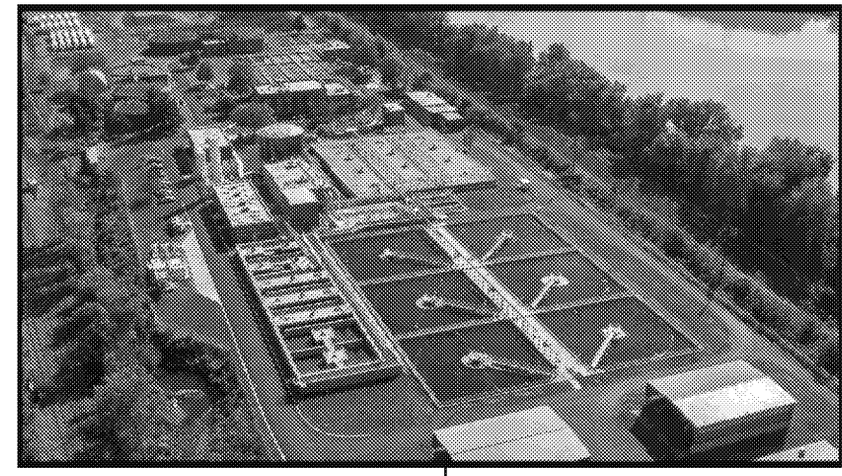
City Beautiful
H_2O

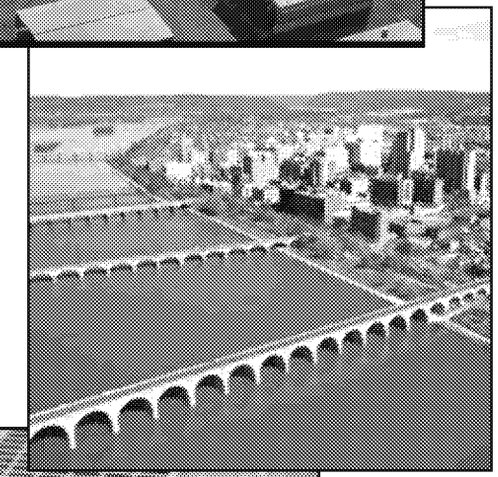
Coordination Meeting with Department of Justice April 26, 2021



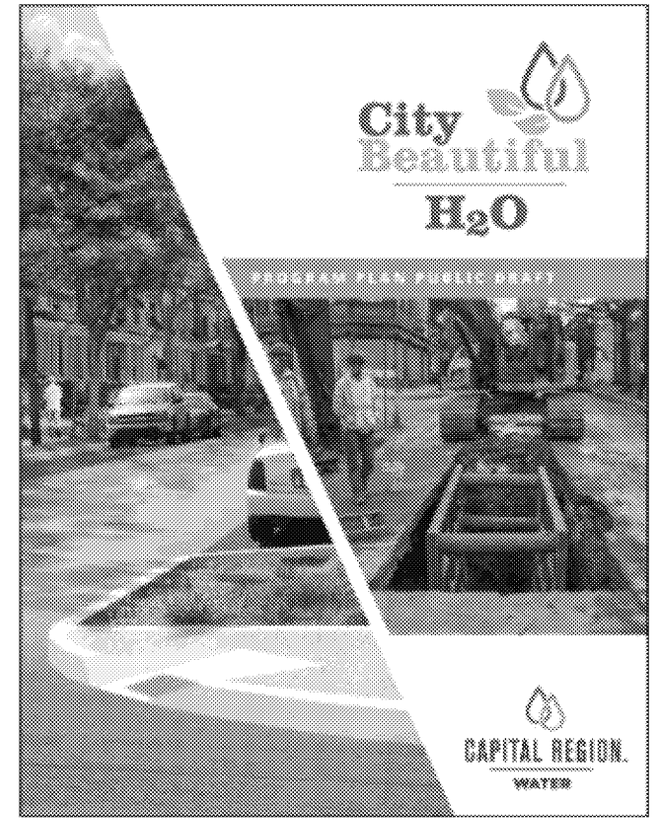
Key Discussion Topics

- Topic 1: Introduction and Historic Overview
- Topic 2: Status of Current Projects
- Topic 3: Overview of 12-Year Project List
- Topic 4: Revising the CBH_2OPP
- Next Steps and Call / Meeting

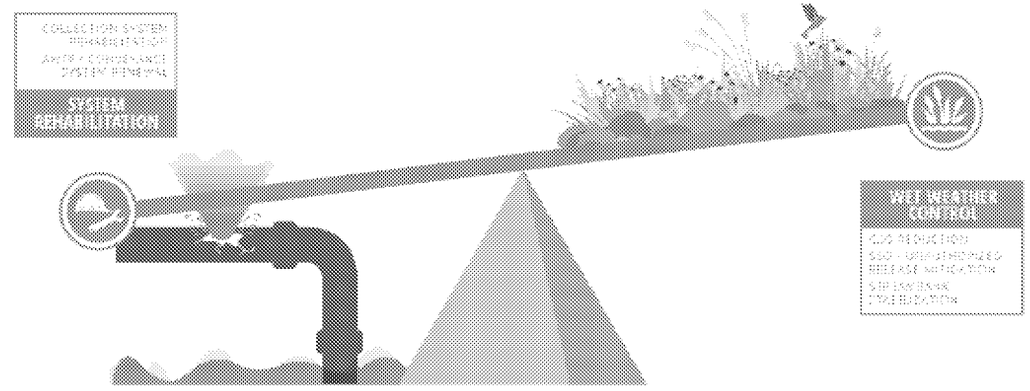




Topic 1: Introduction and Overview



- The CBH_2OPP is based upon EPA guidance under the Clean Water Act for CSO Long Term Control Plans and Integrated Plans
- The CBH_2OPP utilizes a decentralized green/grey control strategy to manage CSOs, "*Unauthorized Releases*[1]", SSOs, MS4 discharges, and other sources of water quality impairment
- The CBH_2OPP must ensure delivery of reliable service (i.e., system renewal) consistent with Federal Clean Water Act and Commonwealth Clean Streams Law obligations in a manner (i.e., implementation schedule) our ratepayers can afford (i.e., EPA Financial Capability Assessment guidance)
- The CBH_2OPP will be implemented under an adaptive management approach to facilitate required flexibility



[1] Defined term in Partial Consent Decree

Topic 1: Historic Overview

Capital Region Water 2009-2013

- The Harrisburg Authority (THA) - CRW legacy org. *Conveyance & Treatment Systems*
- City of Harrisburg - *Combined Sewer Collection System, MS4 & O&M Workforce*

- $360MM WTE Incinerator Debt Default *(THA/City)*
- Act 47 Commonwealth Receivership *(City)*
- Sewer Revenues to General Fund Needs *(City) - Total from 2005-2013 was estimated to be $50MM diverted to the City's general fund from sewer revenues.*
- Threat of Municipal Bankruptcy *(City Council)*

Topic 1: Historic Overview

Capital Region Water 2013-2015

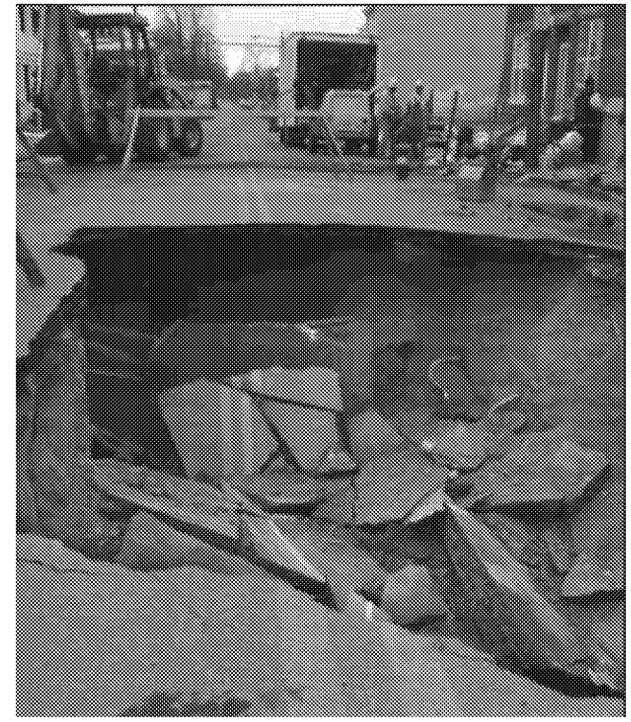
- USDOJ/EPA/PADEP CD Negotiations w/THA & City
- Harrisburg Strong Plan - Act 47 Recovery Plan
  - City Workforce Transitioned to THA
  - City Collection System & MS4* Assets Transferred to THA
- Capital Region Water replaced THA (revised Articles of Incorporation)
- GIS/CMMS/Asset Management Program Development
- Flow/Rainfall Monitoring Program (with EPA/DEP approval)

* City retained streets, curb/gutters, etc. (surface MS4 features)

Topic 1: Historic Overview

Capital Region Water 2013-2015 (Continued)

- *"Legacy Sinkholes" - 116 sites transferred*
- HAWTF BNR Upgrade Awarded *$40MM project*
- Community Greening Plan (GSI Master Plan)
- Partial Consent Decree Lodged *February 11, 2015*



Topic 1: Historic Overview

Capital Region Water 2015-2018

- City Beautiful H_2O Program Plan *(Integrated WW/SW Master Plan - including LTCP Update)* Developed
- CRW Operated and Maintained Collection, Conveyance and Treatment Systems - *following decades of deferred maintenance before CRW*
  - CSS NMC and O&M Manual
  - Cleaned & Rebuilt Catch Basins/Clean & Televised Sewers
  - Acquired MS4 Permit/Operated system
- Plan, Develop and Execute Capital Program

City Beautiful H_2O

Capital Projects Overview

- Investment in Completed Projects since 2013 Transition *

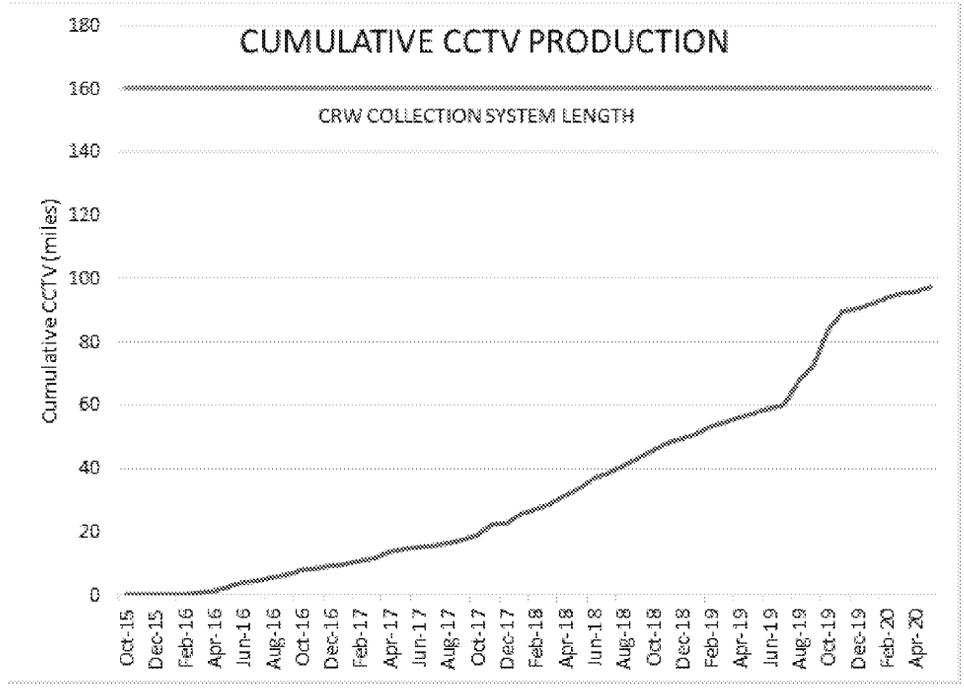
YEAR	ADMIN	WATER	WASTEWATER	TOTAL
2013	68,784	205,119	523,639	797,542
2014	95,015	2,131,748	712,971	2,939,734
2015	242,763	573,782	605,046	1,421,591
2016	34,069	2,616,908	44,183,220	46,834,197
2017	20,993	2,865,205	12,535,672	15,421,870
2018		11,101,054	22,964,725	34,065,779
2019	2,200	2,335,357	6,930,133	9,267,690
TOTAL	463,825	21,829,173	88,455,406	110,748,404

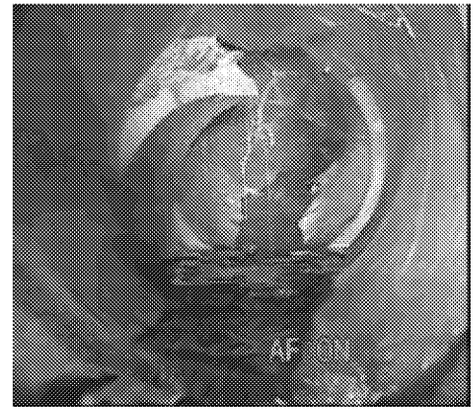
* Does not reflect >$20MM (Front St. P.S. & Digester Rehab) and ~$40MM (Interceptors Rehab), in progress

Topic 1: Historic Overview

Collection System CCTV and Restoration

- CCTV investigations and condition assessments have been completed for over 90 miles of sewer pipe
- CCTV progress is on schedule for completion by end of 2022 (despite early 2020 delays due to Coronavirus)
- Completed condition assessments show magnitude and extent of pipe defects are worse than initially estimated for the CBH_2OPP
- CRW continues to adjust Asset Management Plan as dataset grows, currently continuing on $5MM/yr collection system R/R trajectory



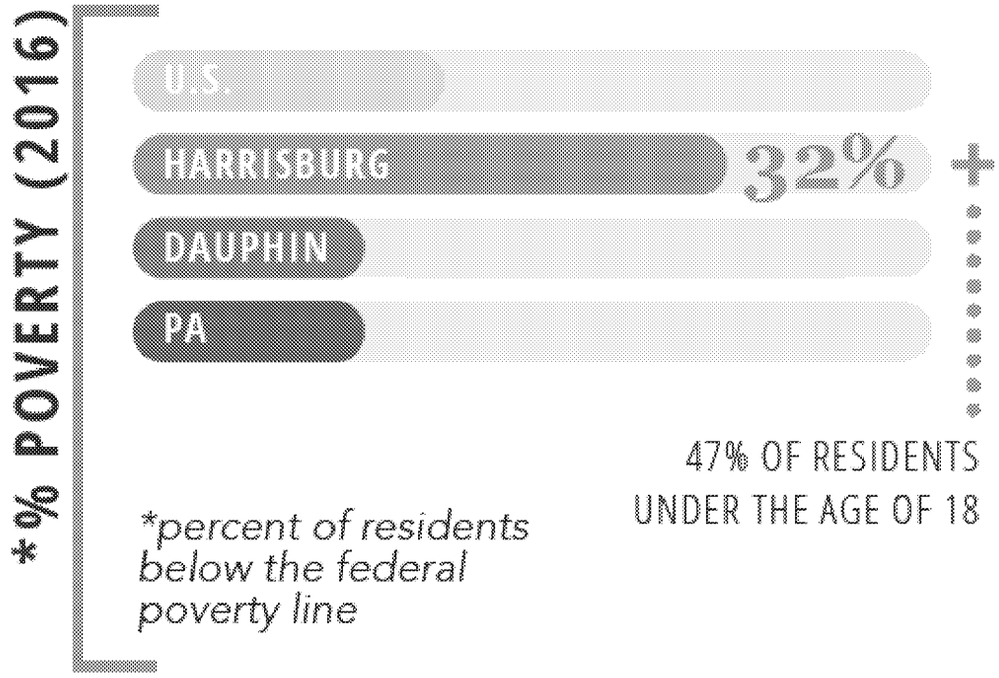


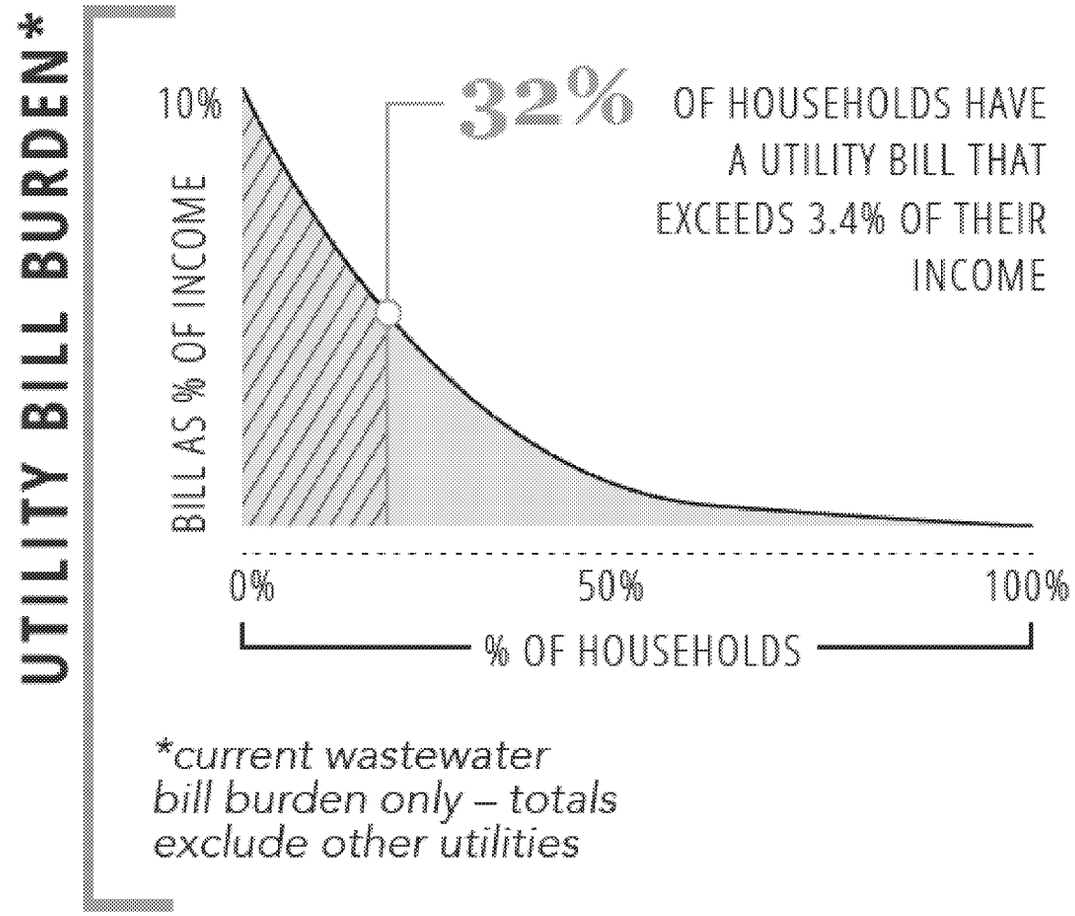
Topic 1: Historic Overview

Catch Basin Cleaning and Restoration

- All catch basins and storm inlets have been inspected and cleaned - many were clogged and/or filled with debris
- Any structurally defective catch basins and storm inlets have been reconstructed and restored
- Storm grates (both vertical and horizontal) are being systematically replaced for public safety and capture of floatable materials
- Baffle structures, sewer hoods, and sumps support CRWs approach to NMC 6, Control of Solids and Floatable Materials

Topic 1: Historic Overview - Financials

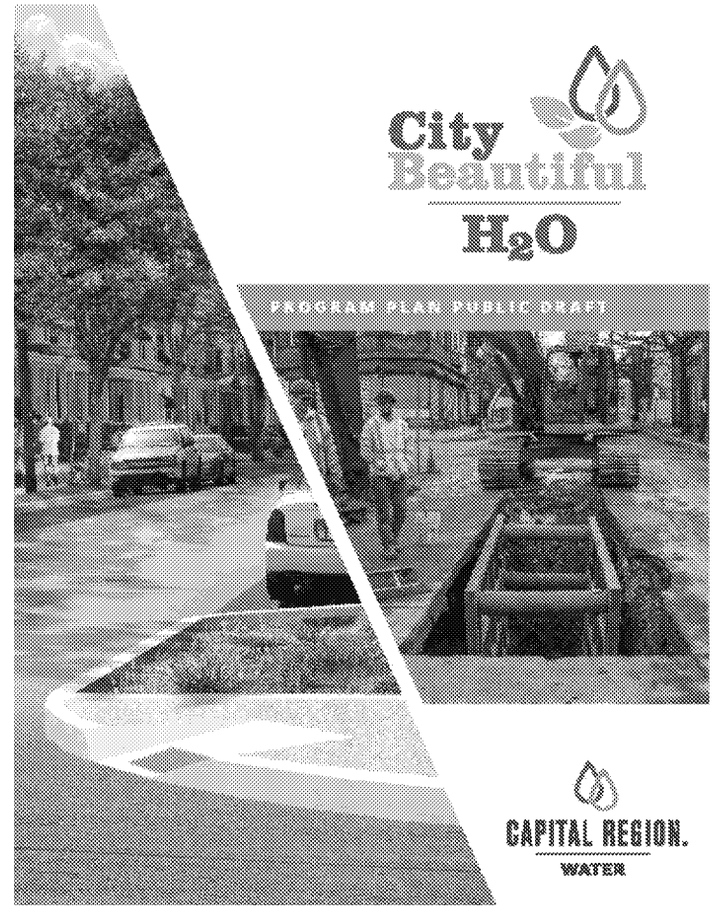




Topic 1: Historic Overview

Summary of Engagement with EIP/Lower Susquehanna Riverkeeper

- Prior to 2019, CRW is not aware of any formal involvement/input from EIP or Lower Susquehanna Riverkeeper
- CRW met with EIP in the spring of 2019 and responded to questions.
- CRW responded to multiple inquiries by EIP for information on the CBH2O Program Plan in 2019 and 2020, after EIP published a report.
- We post all Semi-Annual Reporting and other Compliance documents on our website. We have directed EIP and Lower Susquehanna Riverkeeper to those documents.



Topic 1: Historic Overview

Letter of Support from Choose Clean Water Stormwater

March 12, 2018

J. Marc Kurowski, P.E., Chairman
Capital Region Water
212 Locust Street, Suite 500
Harrisburg, Pennsylvania 17101

Re: Draft City Beautiful H_2O Program Plan

Dear Mr. Kurowski:

We, the undersigned members of the Pennsylvania Campaign for Clean Water Stormwater Workgroup (Campaign), thank Capital Region Water (CRW) for the opportunity to provide comment on the City Beautiful H_2O Program Plan (Program Plan).[1] Campaign members have vested interests in clean water and support federal, state, and local policies that protect and restore Pennsylvania's water resources, especially the many miles of waterways impacted by polluted runoff from storm events. The purpose of the Program Plan is to comply with the requirements of the Long-Term Control Plan (LTCP) for Combined Sewer Overflows established in the Partial Consent Decree between CRW and the U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (DEP).

Sincerely,

Thomas Y. Au, Water Issues Chair
Sierra Club Pennsylvania Chapter

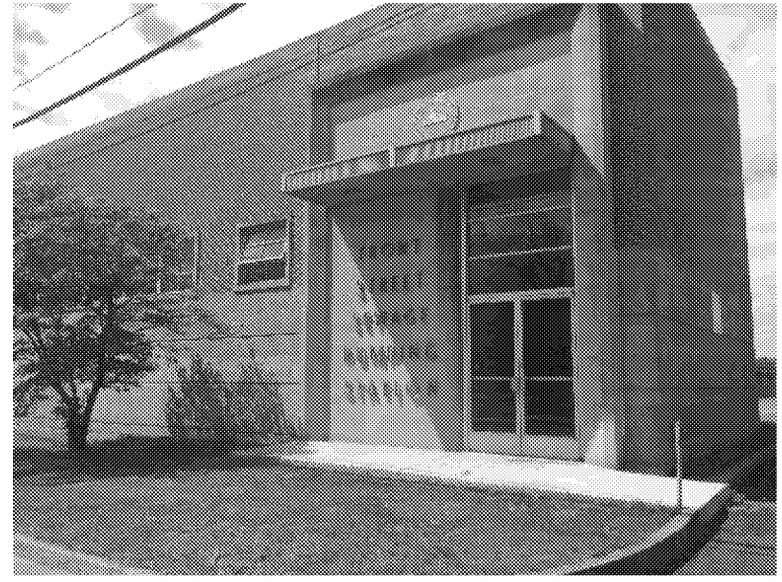
Harry Campbell, Pennsylvania Executive Director
Chesapeake Bay Foundation

Renee Reber, Associate Director
American Rivers

Topic 2: Status of Current Projects

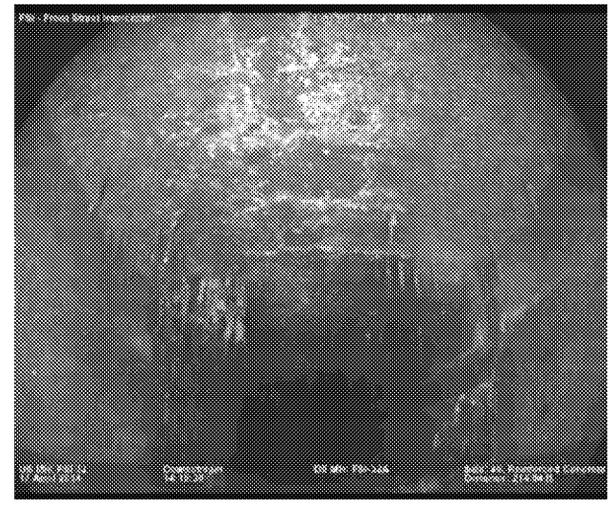
Front Street Pump Station - $13.6MM

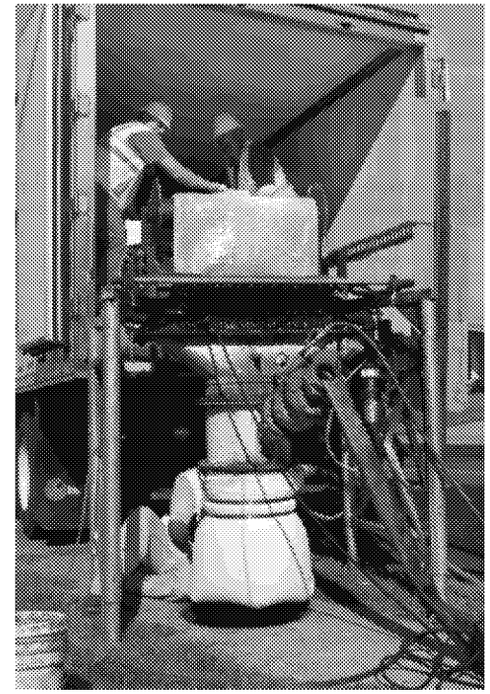
- Scheduled for Completion Summer 2021
- Expansion of Hydraulic Capacity to 60 MGD
- Rehabilitation of all Station Mechanical, Electrical, etc.
  - Duperon mechanically cleaned screening (3/4 in)
  - Modern MCC, I&C, VFDs
- Reestablish System Reliability
- Maximize Flow to AWTF
- Increase Systemwide Wet Weather Capture
- Will allow Modification of Selected Regulator Structures at CSO Overflows
  - Systemwide CSO capture would increase 5% to 7% over the typical year



Topic 2: Status of Current Projects

Front Street Interceptor Rehabilitation





- Cured-in-Place Pipe (CIPP) Lining
- Repair Significant Structural Degradation
  - Exposed reinforcement and aggregate
  - Compromised Structural Stability
- Reestablish Hydraulic Capacity - Allow Pipe to Surcharge
- Reestablish Structural Integrity and System Reliability
- Target for Completion end of December 2022
- Estimated Cost: $20MM

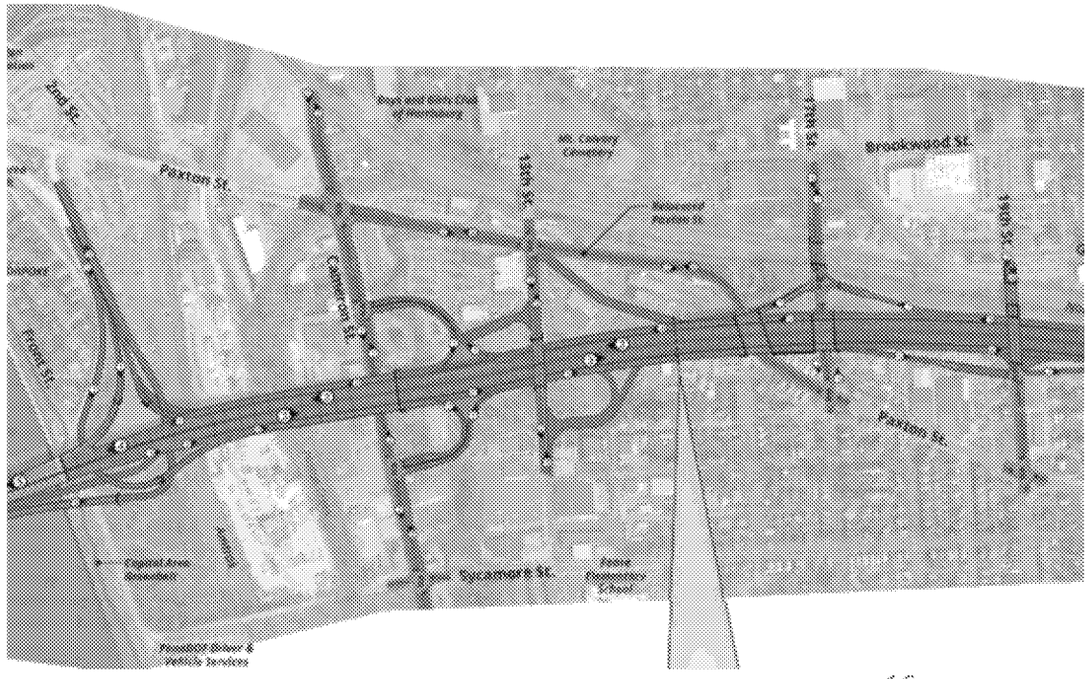
Topic 2: Status of Current Projects

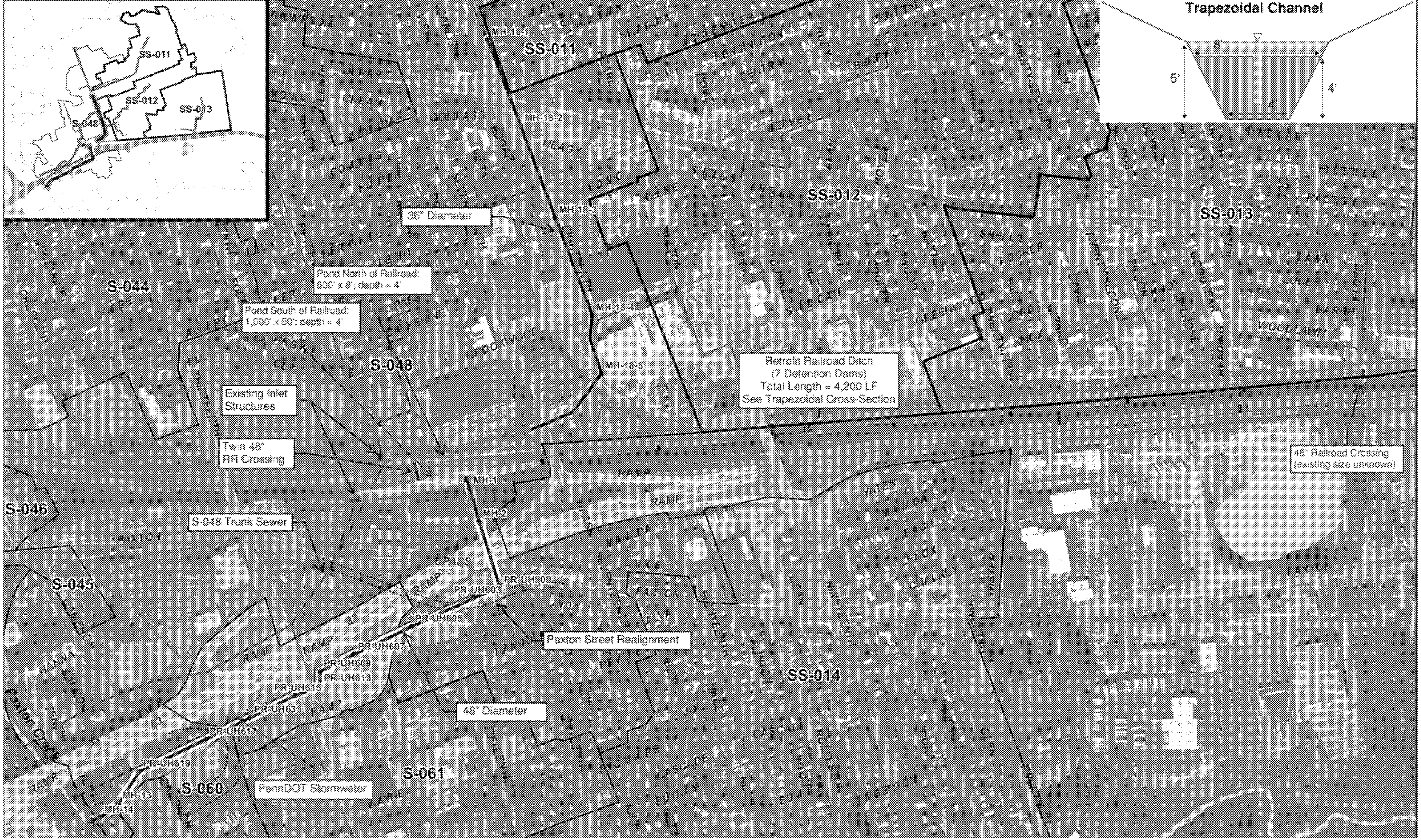
I-83 Expansion Project for CSO Catchment S-048

- Continued coordination with PennDOT for Phase 1 design
- Phase 1: Construct a stormwater diversion pipe along I-83
- Phase 2: Disconnect upstream stormwater flow from the combined sewer system and construct stormwater outfall to Paton Creek
- Total Estimated Cost: $9.14MM
- Phase 1 to align with PennDOT schedule - Estimated Construction 2022-2024
- Phase 2 Estimated Construction 2031-2032

Resulting Benefits from Project

- Increases annual CSO capture at CSO-048 catchment from 34% to 87.6% for typical year precipitation
- Reduces annual CSO frequency, volume and duration



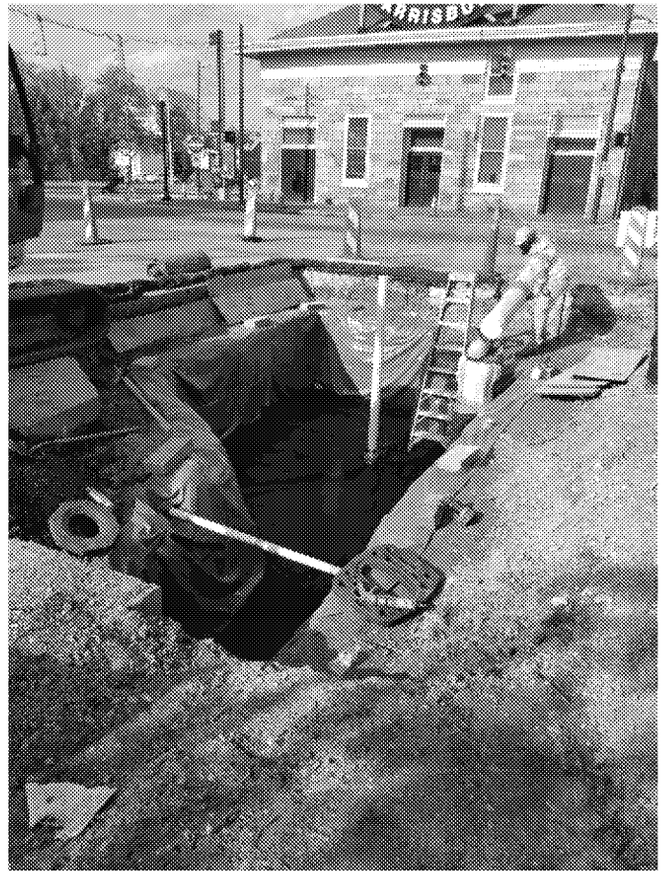

Trapezoidal Channel
8'
5'
4'
4'
SS-011
SS-012
SS-013
SS-014
S-044
S-045
S-046
S-048
S-060
S-061
MH-18-1
MH-18-2
MH-18-3
MH-18-4
MH-18-5
MH-1
MH-2
MH-13
MH-14
36" Diameter
Pond North of Railroad:
600' x 8'; depth = 4'
Pond South of Railroad:
1,000' x 50'; depth = 4'
Existing Inlet
Structures
Twin 48"
RR Crossing
S-048 Trunk Sewer
Retrofit Railroad Ditch
(7 Detention Dams)
Total Length = 4,200 LF
See Trapezoidal Cross-Section
48" Railroad Crossing
(existing size unknown)
PR-UH900
PR-UH603
PR-UH605
PR-UH607
PR-UH609
PR-UH613
PR-UH615
PR-UH633
PR-UH617
PR-UH619
Paxton Street Realignment
48" Diameter
PennDOT Stormwater
Paxton Creek

Topic 2: Status of Current Projects

Decentralized Green/Grey Controls

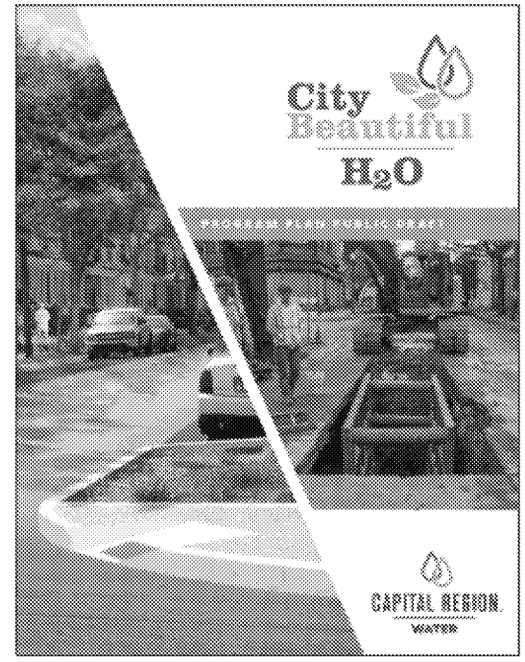
- Manage 100 acres of impervious area with Green Stormwater Infrastructure and Decentralized grey stormwater controls
- First 5 years of the program focused on the three priority planning area projects are funded thru PENNVEST low interest loan ($13MM)

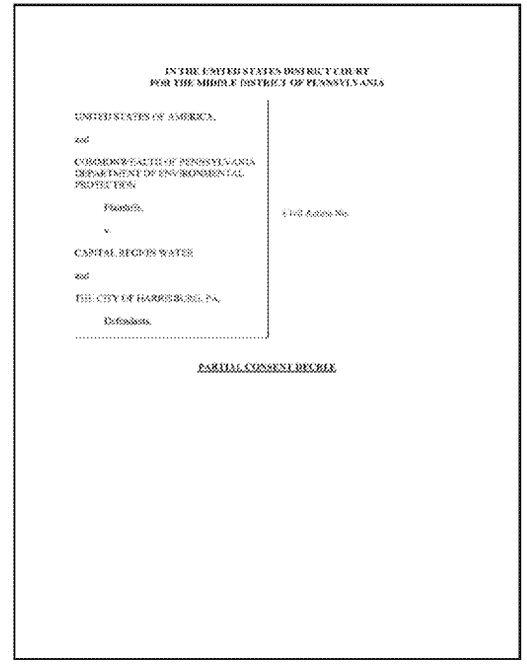
- Schedule
  - Annually through 2032
- Approximate Cost
  - $13M through 2025
  - $20M 2025-2032



Topic 3: Overview of 12-Year Project List

- Presented during September 24, and November 17, 2020, coordination meetings with regulatory agencies
- Projects, cost estimates, and schedules would be integrated into a revised Partial Consent Decree
- Projects would achieve a systemwide CSO capture of 83.7%
- Projects would restore system resiliency and reliability




IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

UNITED STATES OF AMERICA,

and

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

Plaintiffs,

v.

CAPITAL REGION WATER

and

THE CITY OF HARRISBURG, PA.

Defendants.

Civil Action No.

PARTIAL CONSENT DECREE

Capital Region Water

Appendix A – CSO Control Projects and Investments 2021-2032

	Project Description and Key Components		Estimated Project Cost (millions)[1]	Investment Commitment (millions)	Start Construction	Complete Construction
1	**Front Street Pump Station** -Rehabilitation and upgrade, increased capacity to 60 mgd -Enhanced SCADA controls, maximize flow to AWTF		$2.75		n/a	9/30/2021
2	**Front Street Interceptor** -CIPP lining -Restore structural integrity and hydraulic capacity		$20.20		9/30/2021	12/31/2022
3	**AWTF Primary Clarifier Improvements** -Equipment replacement (drives, chains, flights, pumps) -Structural rehabilitation and enhanced baffling		$7.50		3/31/2023	12/31/2024
4	**Continued Enhancements to AWTF**					
4a	-Anaerobic digester roof repair and primary digester facilities		$1.61		n/a	9/30/2021
4b	-Cogeneration (CHP) to RNG/WAS thickening/HSW receiving		$15.40		9/30/2021	12/31/2023
4c	-Gravity thickeners		$2.10		3/31/2024	3/31/2025
4d	-Secondary digester conversion		$11.00		9/30/2027	6/30/2029
4e	-Dewatering improvements		$0.60		3/31/2029	3/31/2030
4f	**-General AWTF equipment renewal and replacement**					
	--Phase 1			$2.50	n/a	12/31/2025
	--Phase 2			$2.50	n/a	12/31/2030
	--Phase 3			$1.00	n/a	12/31/2032
5	**Decentralized Green/Grey Controls**					
5a	-Phase 1: South Allison Hill GSI -Phase 2: 4th & Dauphin Park GSI	Approx. 3 managed acres	$0.59		9/30/2020	6/30/2021
5b	-Phase 3: Camp Curtin YMCA GSI and Bellevue Park SW Ponds	Approx. 8 managed acres	$3.33		12/31/2021	12/31/2022
5c	-Phase 4: Lower Paxton Creek, Uptown, and Lower Front planning areas GSI	Approx. 21 managed acres	$5.97		9/30/2022	6/30/2024
5d	-Phase 5: Lower Paxton Creek, Uptown, and Lower Front planning areas GSI	Approx. 18 managed acres	$5.09		9/30/2023	6/30/2025
5e	-Phase 6	Approx. 50 managed acres		$12.50	n/a	12/31/2030
5f	-Phase 7			$5.00	n/a	12/31/2032
6	**Collection System Renewal (Asset Management Program)** -Selected projects to correct defects identified during CCTV inspections					
	--Phase 1			$20.90	n/a	12/31/2025
	--Phase 2			$20.30	n/a	12/31/2030
	--Phase 3			$9.01	n/a	12/31/2032

[1] Estimated project costs are included for informational purposes only, and are not enforceable investment commitments.

Capital Region Water

Appendix A – CSO Control Projects and Investments 2021-2032

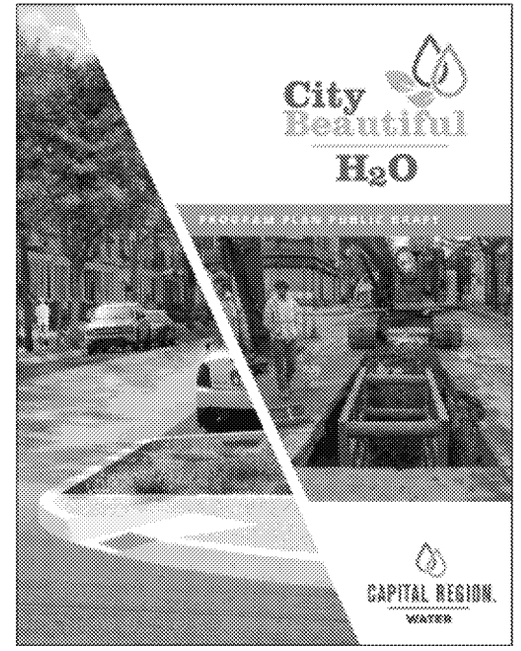
	Project Description and Key Components	Estimated Project Cost (millions)[1]	Investment Commitment (millions)	Start Construction	Complete Construction
7	**Collection System Projects**				
7a	-A: Small sewer separation in CSO 027 and CSO 060 areas	$0.80		3/31/2022	12/31/2024
7b	-B: Small sewer separation in CSO 032 and CSO 041 areas	$0.70		9/30/2029	12/31/2030
7c	-C: Modification to selected CSO regulators identified after completion of Project 1	$0.03		12/31/2021	6/30/2022
7d	-D: Phase 1 storm sewer diversion in CSO 048 area --Partial construction of 48" diversion pipe	$2.04		n/a[2]	n/a[2]
7e	-E: Phase 2 storm sewer diversion in CSO 048 area --Continued construction of 48" diversion pipe	$0.88		n/a[2]	n/a[2]
7f	-F: Phase 3 storm sewer diversion in CSO 048 area --Completion of 48" diversion pipe --18th Street 36" diversion pipe --Surface detention and water quality management	$6.22		6/30/2031	12/31/2032
8	**Paxton Creek Interceptor** -Segmented slip lining or replacement -Restore structural integrity	$21.40		n/a	6/30/2027
9	**Rehabilitation and Enhancement of CSO Regulator Structures**				
9a	-A: Front Street Interceptor outfall pipes, flap gates, control orifices, dam heights	$1.05		3/31/2023	6/30/2023
9b	-B: Paxton Creek Interceptor outfall pipes, flap gates, control orifices, dam heights	$1.05		3/31/3030	9/30/2030
10	**Spring Creek Pump Station and Interceptor**				
10a	-Phase 1: Study/Design	$1.40		n/a	3/31/2025[3]
10b	-Phase 2: Construction --Rehabilitation or replacement of pump station to increase capacity to 20 mgd --Enhanced SCADA controls, maximize flow to AWTF	$14.10		3/31/2026	12/31/2028
11	**NMC 6 Control of Solids and Floatable Materials** -Storm inlet rehabilitation and modification (sewer hoods)	$2.20		n/a	12/31/2030

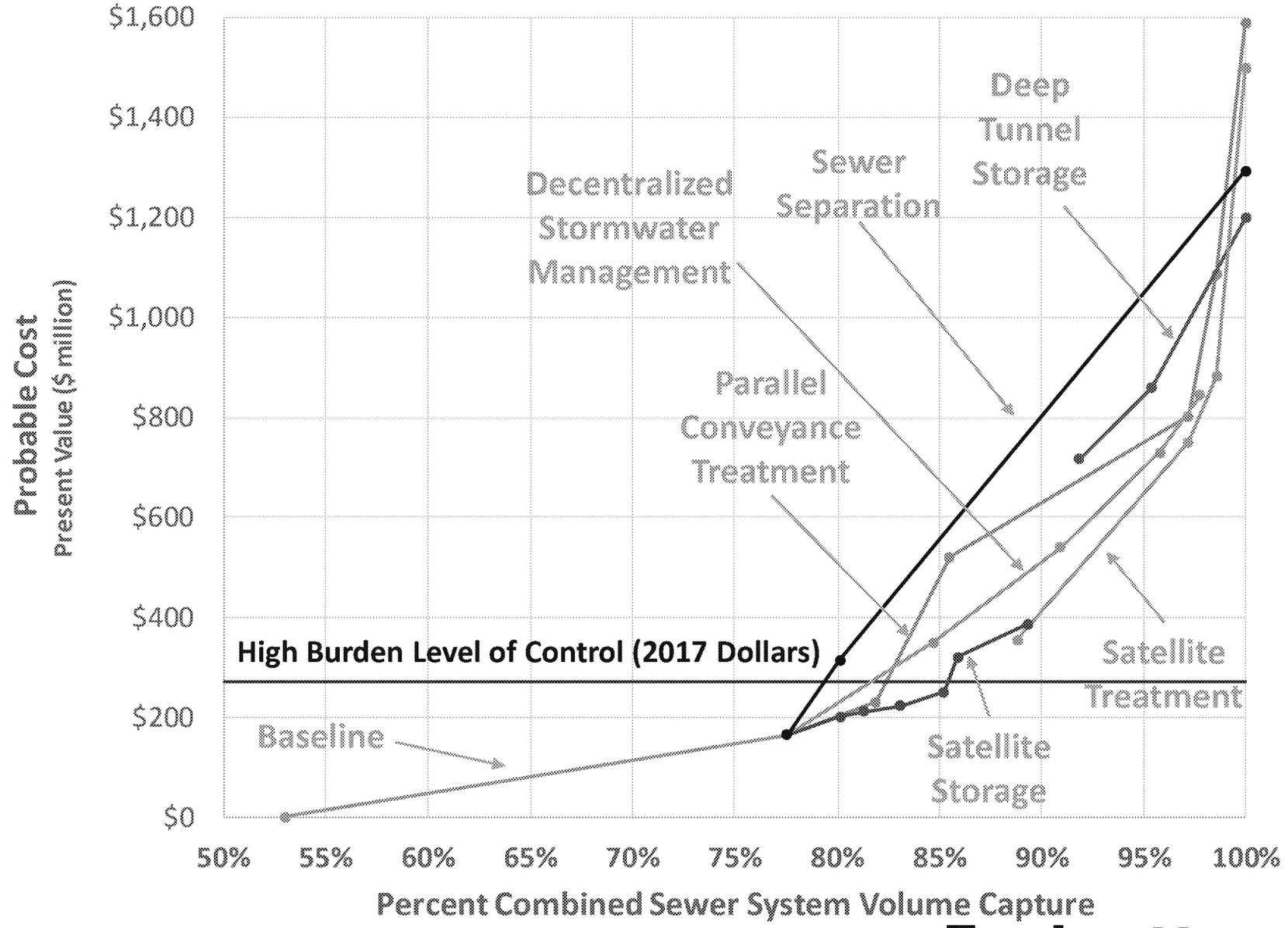
[2] Schedule for Phase 1 and Phase 2 storm sewer diversion in CSO 048 area will be coordinated with PennDOT expansion of I-83, currently scheduled for 2022-2023 (Phase 1) and 2024-2026 (Phase 2).

[3] Date for Spring Creek Pump Station Phase 1: Study/Design refers to the completion of Study/Design only.

Topic 4: Revising the CBH_2OPP

- The revised Plan will continue to be based upon EPA guidance for an integrated municipal stormwater and wastewater planning approach
- The revised Plan will continue to use a decentralized green/grey control strategy to manage CSOs, Unauthorized Releases, SSOs, MS4 discharges, and other sources of water quality impairment
- The CBH_2OPP will ensure the delivery of reliable service (i.e., system renewal) with environmental compliance within an implementation schedule our ratepayers can afford
- The CBH_2OPP will be implemented under an adaptive management approach to facilitate required flexibility
- The revised plan will include three milestones along the path to compliance
  - Complete the 12-year project list
  - Achieve 85% capture
  - Demonstrate Compliance - Review and appropriate revision of WQS and implementation procedures on CSO-impacted waters to ensure that the long-term controls will be sufficient to meet water quality standards





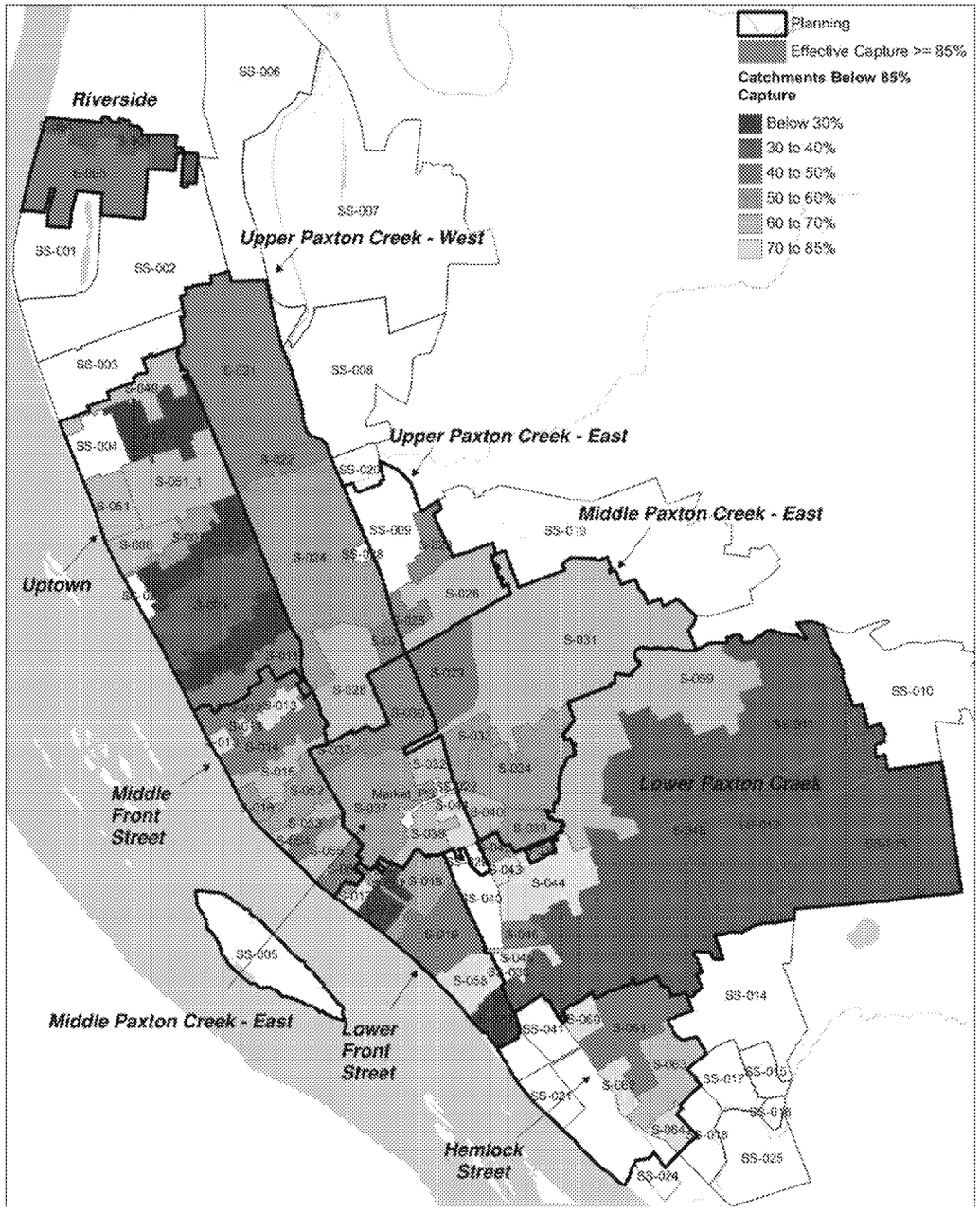
Financial Capability Assessment (FCA):

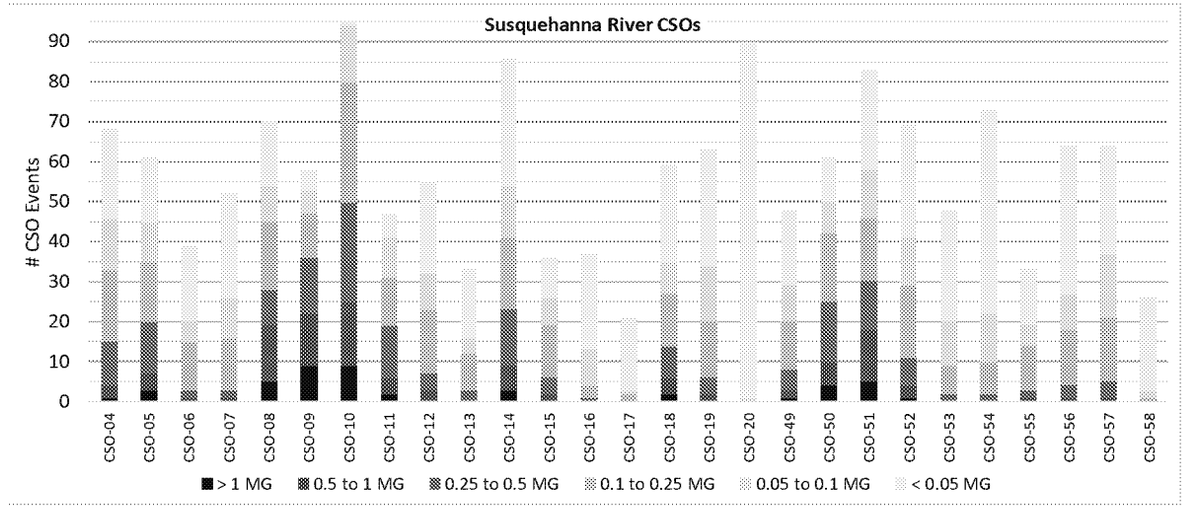
- The FCA quantified a high level of financial burden (2017)
- Financial burden will be reevaluated based on updated financial information and applicable EPA guidance

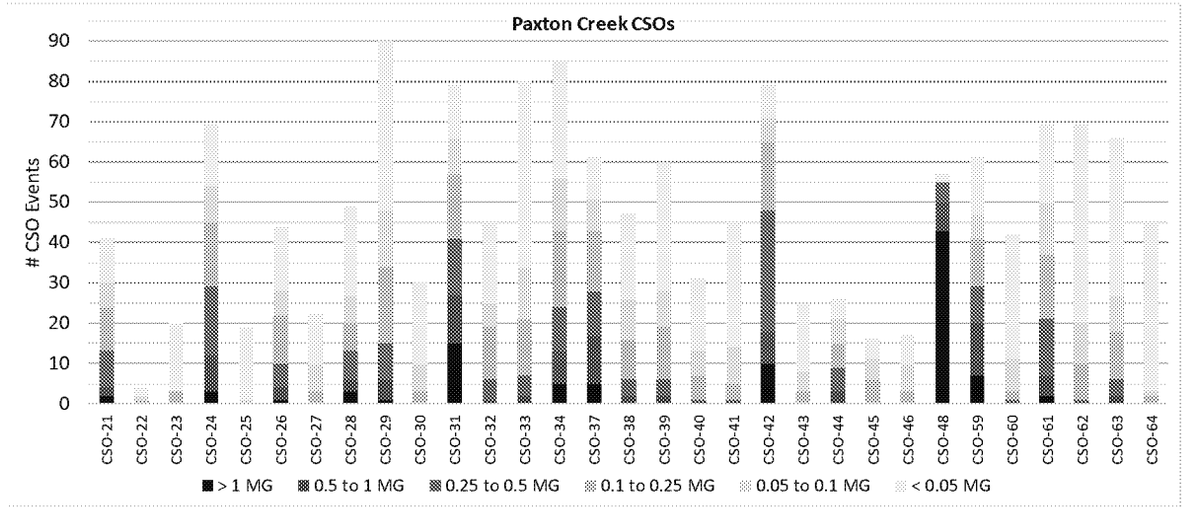
Evaluating Control Alternatives

Knee of the Curve Cost-Performance

Existing Conditions – The Starting Point



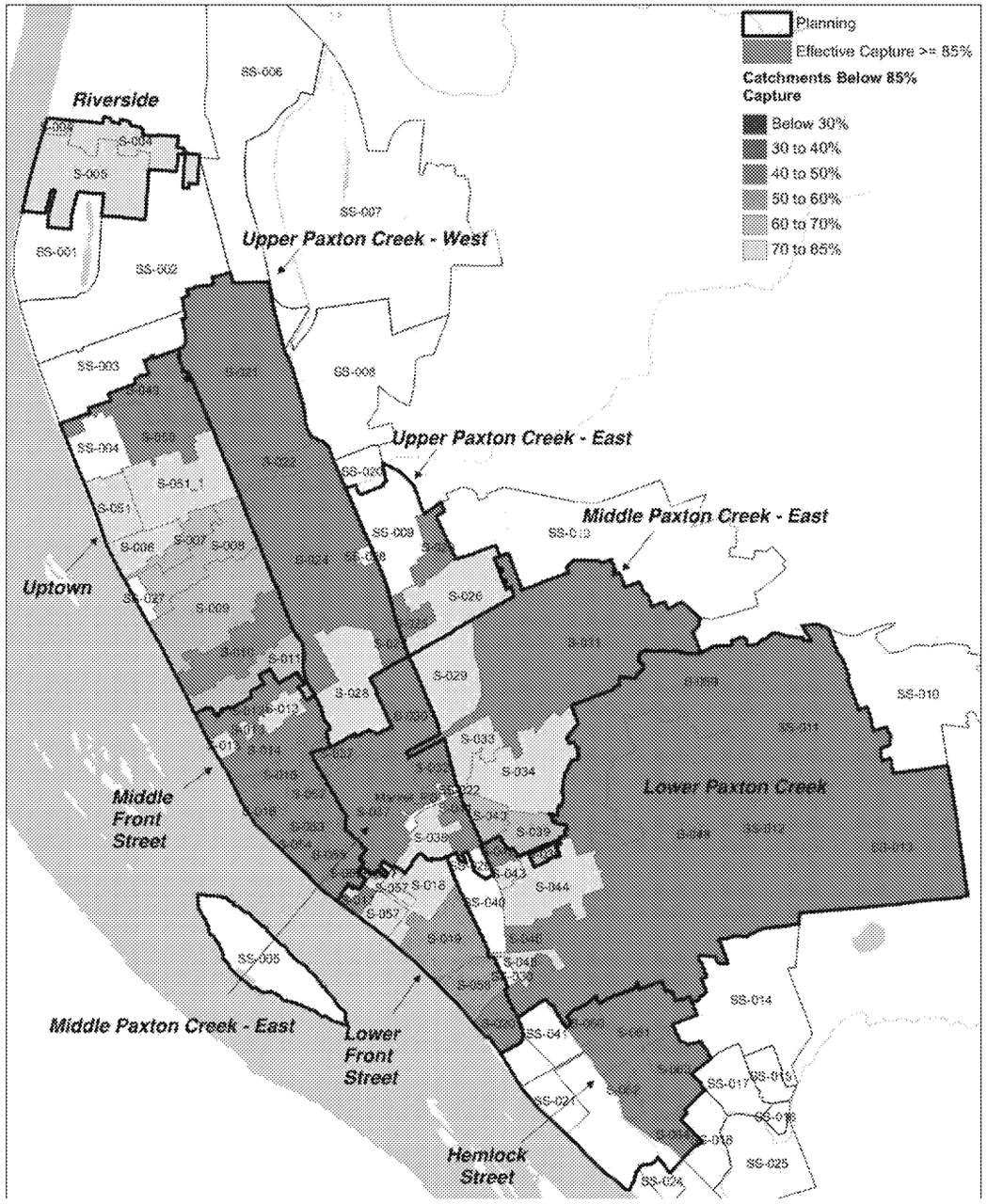


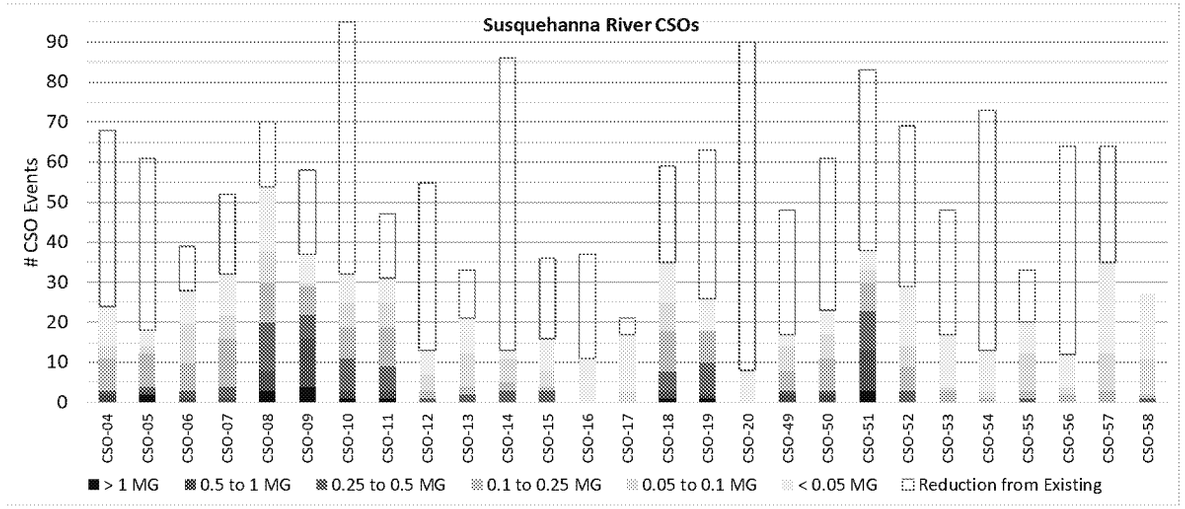


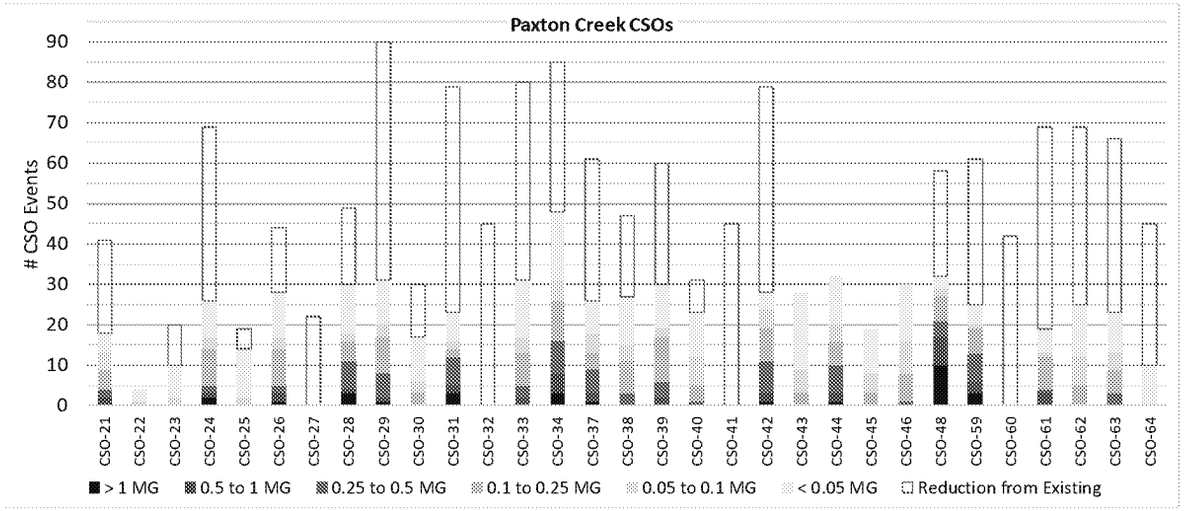
Existing Conditions Starting Point

- 53% systemwide capture
- CSO frequency ranges from 16 to 95
- Annual CSO discharge volume of 796 MG (typical year precipitation)

Milestone 1: 12-Year Project List





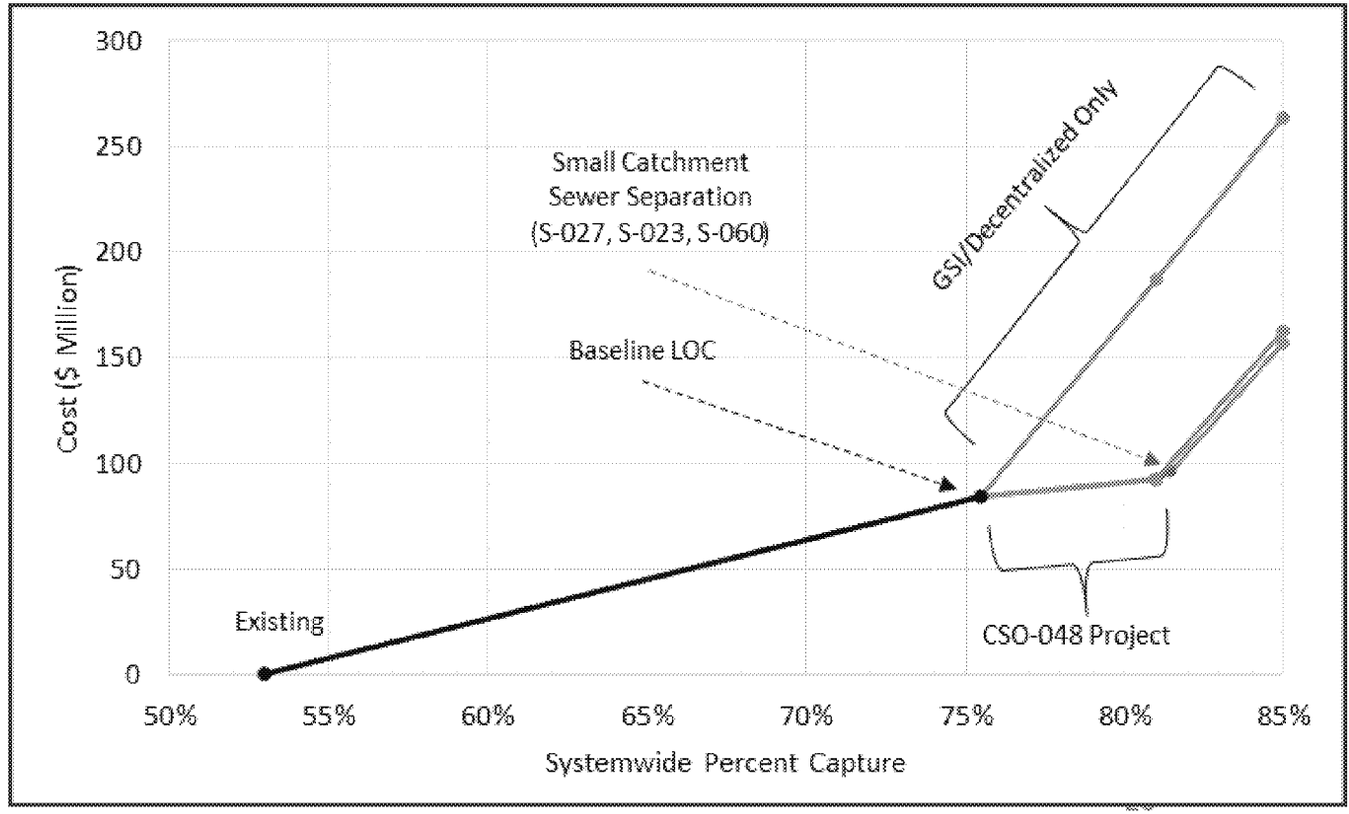


Conditions after 12-Year Projects Completed

- 83.7% systemwide capture
- CSO frequency ranges from 0 to 54
- Annual CSO discharge volume of 280 MG

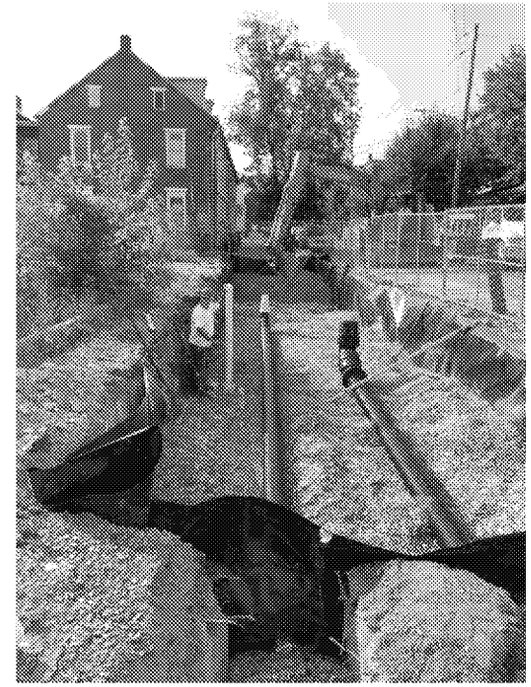
Milestone 2: Achieving 85% Systemwide Capture

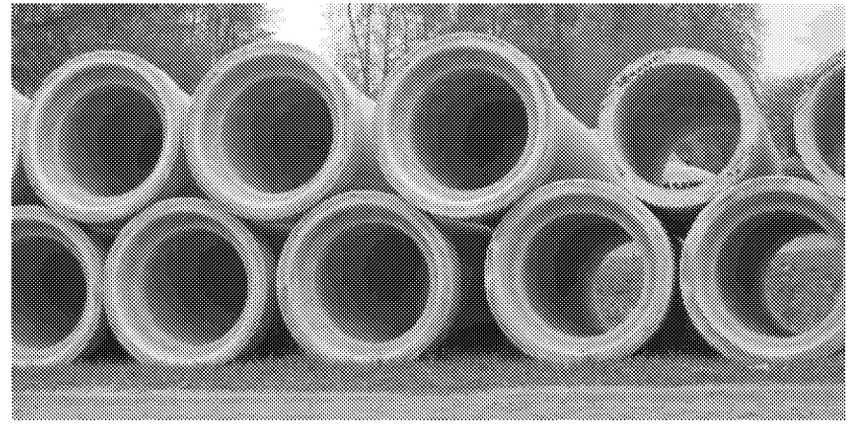
- Implementing the proposed CSO-048 projects would reduce the time required to achieve 85% systemwide capture (an important milestone goal for EPA) from 49-58 years to about half the time.
- Without the CSO-048 projects it would cost $265 million to achieve 85% systemwide capture using decentralized green/grey controls to augment the baseline level of control
- Investing $9.14 million will reduce the cost to $155 million - a savings of $100 million
- A cost sharing agreement will be developed with PennDOT for design and construction and final design pipe size, configuration, and cost
- Additional costs for WQ management may be required in the future to meet Paxton Creek TMDL and Chesapeake Bay requirements for sediments and nutrients



Milestone 2: Achieving 85% Systemwide Capture

- Additional 1.3% systemwide capture would be achieved by implementing a combination of GSI and in-line storage projects
- Specific project locations, control facilities, and sizes will be determined through detailed analyses and implemented under adaptive management
- The H/H model would be recalibrated to new monitoring data to verify system performance and 85% capture



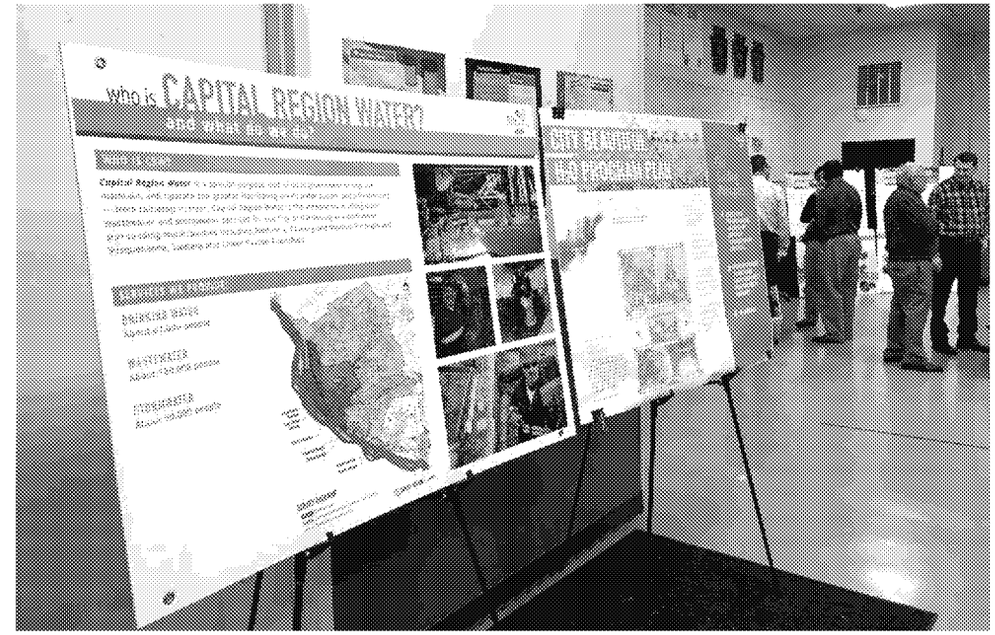


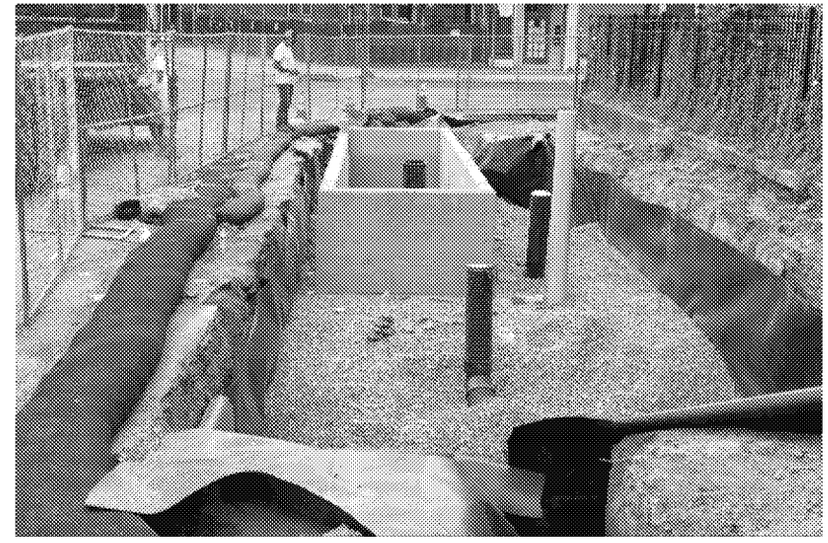
Proposed Elements in LTCP/Integrated Plan

- Update the FCA based on latest EPA Guidance, PennVEST loan assumptions, and updated project costs to quantify affordability constraints, update the required time to achieve, WQ standards and determine available budgets for ongoing work
- Continue analyses for identifying, designing, and implementing optimal control sites and projects quantifying the optimal green/grey project mix, and implementing selected projects in 5-year construction cycles
- Continue to use the H/H model to guide the selection of decentralized green/grey control projects, the optimal mix of green and grey, and supplemental storage facilities
- Continue to design and implement selected decentralized green/grey projects and storage facilities
- Use the H/H and WQ models to track ongoing progress and determine when WQ standards should be met

Communication on Revised Plan

- CRW is committed to a robust public engagement strategy
- CRW will continue to engage with key stakeholders throughout the process of revising CBH20 Program Plan
- CRW will conduct a series of public meetings to educate our customers and provide an opportunity for public input
- CRW will post the Revised Plan on our website and provide a platform to submit public comments





Next Steps?
Next call / meeting?

CAPITAL REGION™
WATER

City Beautiful
H_2O